
Operating Instructions

electronic solenoid valve control type IFC 24

Driftinstruktion

Bedrijfshandleiding

Instruções de serviço

Instrucciones de servicio

Istruzioni per l'ésercizio

Instruction de service

Betriebsanleitung

Operating Instructions

**electronic solenoid valve control
type IFC 24**

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Appendix

A Declaration of conformity

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1 Safety precautions and warnings



IMPORTANT NOTICE!

Non-observance of the safety instructions can result in severe personal injury or property damage.

This equipment may be installed, connected, commissioned, operated and maintained by qualified and authorised personnel only, under strict observance of these operating instructions, any relevant standards and legal requirements.


Take particular note of the general and regional installation and safety regulations regarding work on high voltage installations (e.g. VDE), as well as the relevant regulations regarding the correct use of tools and personal protective gear.

Hazardous voltages are present in this electrical equipment during operation.

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1.1 Designation of electrical apparatus for explosion hazardous areas

Designation according to Directive 94/9/EC:	 II 3D
Sign	Signification
II	Equipment group II
3	Equipment category 3
D	For explosive mixtures of air and combustible dust

Particular addition to EN 60079-0	Ex tc IIIB T80°C Dc X IP65 Ta:-10°C ... +40°C
Ex	Ex-protection at European standard
tc	Protection class: protection by enclosure, use in category 3D
IIIB	Dust-group: non-conductive dust
T80°C	Maximum surface temperature
Dc	EPL= Equipment Protection Level: Dust (II 3D)
X	Remarks for special conditions for safe use
IP 65	Ingress protection IP 65
Ta: -10°C ... +40°C	Permissible operating temperature range

Areas of application	
Equipment category	Explosive dust air mixtures (D)
Category 1	Zone 20, 21 or 22
Category 2	Zone 21 or 22
Category 3	Zone 22 not conductive dust
Equipment group II Category 3D	Equipments, that are constructively arranged to operate in agreement with the characteristic quantities given by the manufacturer and ensure a normal measure of safety.
Electrical apparatus for use in the presence of combustible dust	Equipments of this category are intended for the use in areas where you have not to calculate with an explosive atmosphere of dust whirled up. If an explosive atmosphere appears nevertheless, in all probability it will be only rare and during a short time period.

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1.2 Operation of the unit



ATTENTION!

The control may be used in normal operation only with closed lid.

For commissioning and maintenance work with power on you must make sure that no explosive atmosphere of dust-air mixture is present or could occur.

Otherwise the lid may be opened only if the power is switched off.

At least the ingress protection IP54 must be guaranteed.

1.3 Remarks for special conditions for safe use in explosion hazardous areas zone 22



ATTENTION!

1. Permissible operating temperature range Ta: -10°C to +40°C.
2. The control has to be installed within the visual range and must be protected from any mechanical damage.
3. The control must be protected from ultraviolet light (daylight or ultraviolet light from lamps) respectively be mounted in a protected place.
4. Avoid dust deposits on the unit.
5. To avoid electrostatic charging clean the unit with a damp cloth only. Rubbing with nonconductive materials must be strictly avoided.

2 Use as agreed



NOTE!

If used incorrectly application-related dangers may arise.

The control was developed for the cyclic dedusting of filterelements with compressed air impulses.

Up to 24 solenoid valves can be controlled in rotation, with adjustable impulse and delay timing periods.

A 24VDC-Remote control input is available for an external start.

A potential free relay contact is available to give an operational message to a host system.

The control must not be operated outside of its electrical, thermal and mechanical performance limits.

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3 Technical data

Supply voltage (see type plate)	220 to 240VAC 50/60Hz	110 to 120VAC 50/60Hz	24VDC
voltage tolerance	+/- 5%		24-32VDC
	switchable with mains switch		
fuse	315mA medium slow	630mA medium slow	1,6A medium slow
quiescent current consumption	typically 45mA	typically 90mA	typically 60mA

Type	IFC 24 in add-on housing polyester
output	24 solenoid valve outputs 24VDC, output power max. 24W/1A, 13 to 24 outputs are activated manually by means of a multi-contact switch. All outputs are suppressed with a recovery diode.
impulse period	adjustable from 60 to 600 ms, indicated by red LED
delay period	adjustable from 6 to 60 ms, indicated by green LED
indication by LED	red : lack of air, wire breakage green : operational signal (active)
signal output	operational signal, LED green , potential-free relay contact, normally open, contact load max.: I = 0,5A, U = 230VAC
control inputs	R: remote control input, yellow LED, P: input for pressure switch, yellow LED current consumption approx. 15mA,
supply voltage for external triggers	24VDC, 50mA max.
housing material	Polyester, glass-fibre, reinforced
colour	RAL 7000 (grey)
installation	wall installation

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Type	IFC 24 in add-on housing polyester
ingress protection	IP65 to EN 60529
dimensions (B x H x T)	255 x 250 x 120 mm
weight	4,8 kg
cable entries	6 x M16, 4 x M20
clamp range of cable entries	M16 for 4,0 to 8,0 mm or 5,0 to 10mm, M20 for 6,5 to 12,0 mm or 10,0 to 14mm
connection cross section	0,2 to 2,5 mm ²
unit marking	 II 3D Ex tc IIIB T80°C Dc X IP65 Ta: -10°C ...+40°C
maximum surface temperature <i>T</i> of the housing (category 3D) at 40°C ambient temperature	80°C
Permissible ambient temperature	explosion-hazardous area zone 22: Ta: - 10 °C to + 40°C Not explosion-hazardous area: - 20 °C to + 40°C
Conformity	<ul style="list-style-type: none"> • Low voltage directive 2006/95/EC (EN 60204-1) • Electromagnetic compatibility directive 2004/108/EC t (EN 61000-6-1, EN 61000-6-2, EN 55014-1) • ATEX directive 94/9/EC (EN 60079-0, EN60079-31)
	

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4 Installation



ATTENTION!

Observe relevant regulations!

For use in Ex-Area you have to check whether the unit is suitable for the application.
(refer to type plate and technical data)

In general

The control is suitable for the installation in an industry plant.

To be used in explosion-hazardous area (Ex-Area) Zone 22 not conductive dust and in not Ex-Area.

After removal the lid the mounting holes are accessible.

The control is to be installed in a vibration-free location.

Add-on

housing

polyester

The polyester add-on housing can be installed indoors and outdoors under hard conditions. The mechanical resistance is high. Polyester is absolutely corrosion-proof and high-resistant against aggressive chemical mediums.

It has to be installed within the visual range and must be protected from a mechanical damage.

For the installation outdoors the housing must be protect for weather influences with a roof or similar.

For use in explosion-hazardous area the remarks in chapter 1.3 must be observe.

Refer to drawing 4.1 for mounting dimensions

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4.1 Safety notes for the installation



IMPORTANT NOTICE!

- Install according to the manufacturer's instructions and the respective national regulations and provisions as well as the relevant installation regulations.
- Connect and carry the ground wire.

4.2 Safety notes for the installation of the add-on housing



IMPORTANT NOTICE!

The unit must be installed such that the degree of protection IP 65 to EN 60529 is guaranteed (state of delivery).

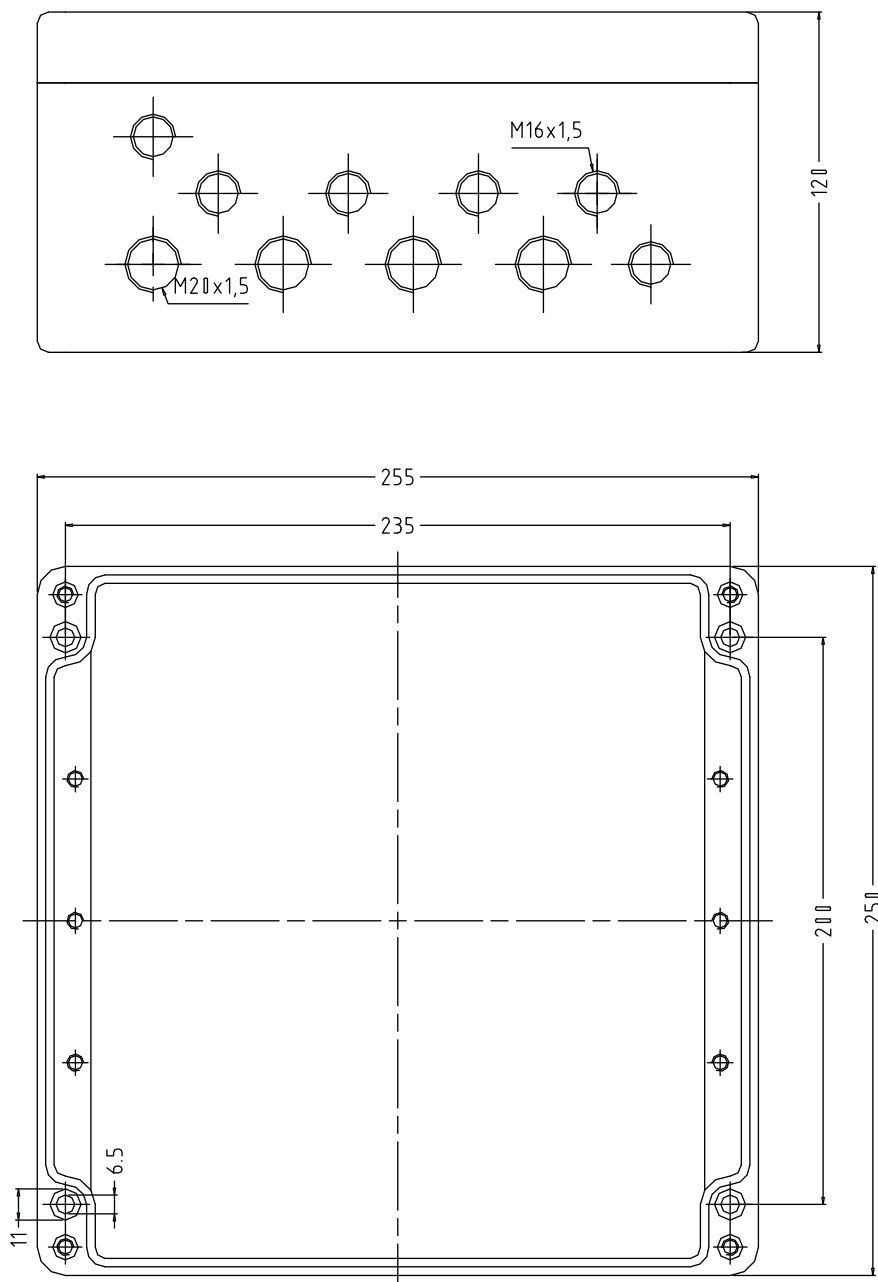
Therefore it is important

- to fix all screws of the lid,
- to mount the cable entries competently,
- to close unnecessary cable entries with stoppers,
- to use in the ex-area only cable glands and stoppers approved for this area.
- The requirements of the EN 60079-14 must be met.

In addition, only the connection of permanently installed cable and wire is allowed. A corresponding strain relief must be ensured.

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Drawing 4.1: Add on housing polyester

length of mounting screws: 4 piece. M6x30 mm minimum

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5 Electrical connection



IMPORTANT NOTICE!

The unit may only be connected to the supply voltage as indicated on the type plate.
The connection of 115 VAC or 230 VAC to a control for 24 VDC will lead to destruction of the entire control unit.

In general

The control is to be connected according to drawing 5.1.
The values given in the technical specification are to be observed (refer to section 3).

Supply voltage

The supply voltage is to be connected to contact strip (1). L and N or L+ and M (refer to drawing 6.1).

Solenoid valves

The solenoid valves are to be connected to contacts 1 to 24 on the contact strip (2). The plus poles of the solenoid valves must be bound together and connected to contacts 25 and 30.
Connect the ground wire to PE on contact strip (1).
The power of the connected solenoid valves may not exceed the maximum output power.

Operating signal output

The operating signal output is available at contacts 31 and 32 on the contact strip (3). It's a potential-free normally open relay contact (refer to Section 7.2).

Remote control input (F)

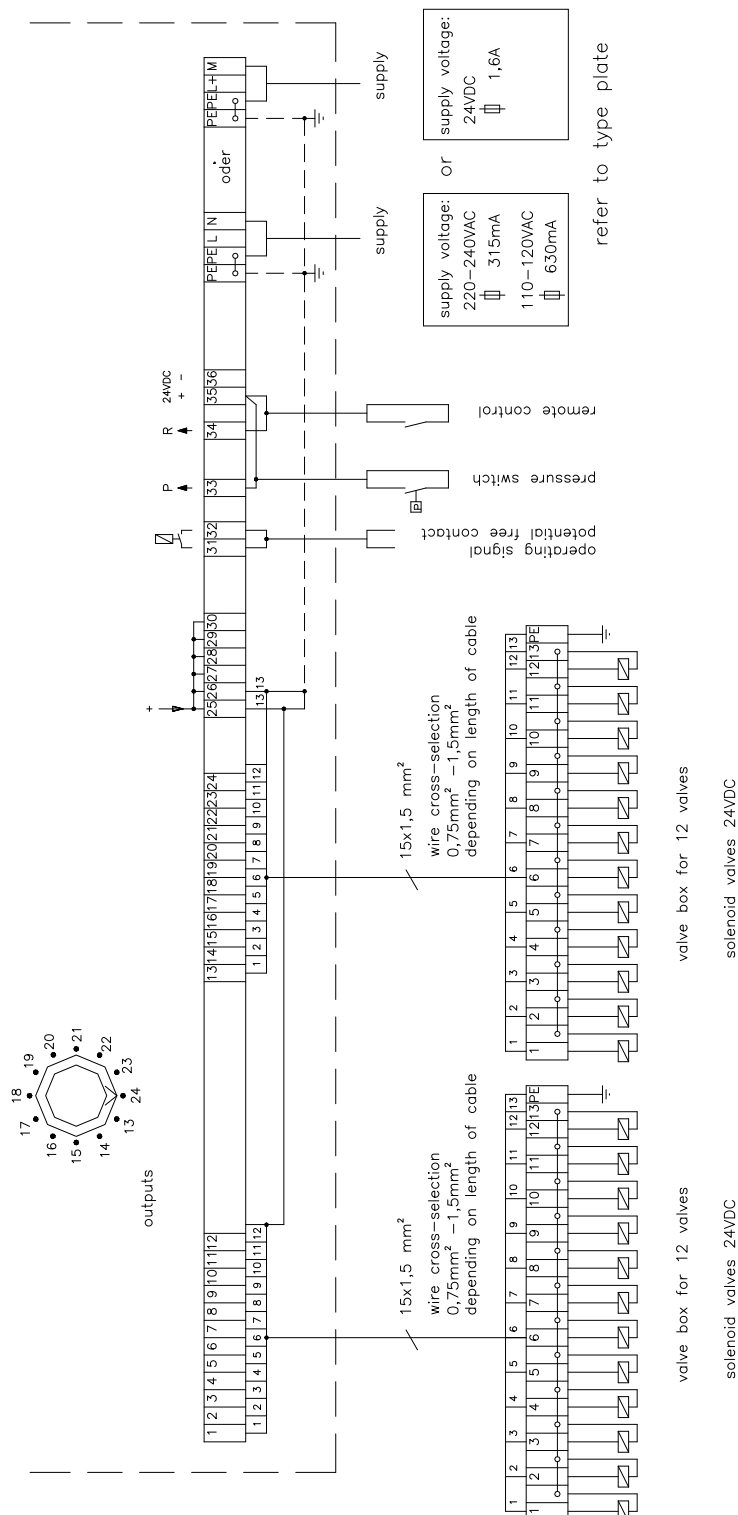
The remote control signal is to be connected on contact 34 on the contact strip (3).
Refer also to Section 7.1.

Pressure switch input

The pressure switch signal is to be connected on contact 33 on contact strip (3). Refer also to Section 7.3.
Supply of power to the triggers is available at contact 35, + 24VDC and contact 36, 0V potential.

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Drawing 5.1: Electrical Connection

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6 Commissioning



ATTENTION!

For commissioning and maintenance work you must make sure that no explosive atmosphere of dust-air mixture is present or could occur.

Otherwise the lid may be opened only if the power is switched off.

The control must not be operated outside of its electrical, thermal and mechanical performance limits.

The following points are to be carried out in the sequence given for initial operation. Refer to drawing 6.1:

- Set the ON/OFF-switch (6) to OFF.
- Check with the type plate which supply voltage is suitable for the unit on hand. 110-120VAC and 220-240VAC or 24VDC
- Set the mains voltage switch (4) to the correct setting for the available supply voltage (110-120V or 220-240V)
- Ensure that the correct fuse is inserted. Refer to the technical data.
- Pre-select the outputs to be controlled by setting multi-position switch (7), as desired
- Set the potentiometers delay and impulse time (10) (11) according to the specifications of the filter manufacturers.
- Select the operating mode by means of the DIP switches (19):

DIP switch 1 ON	⇒	start the controller either via remote control or pressure difference switch (refer to section 7.1)
DIP switch 1 OFF	⇒	controller direct start at connecting supply voltage
DIP switch 2 ON	⇒	nominal operating pressure test (refer to section 7.3). Pressure switch on storage column must be in place.
DIP switch 2 OFF	⇒	nominal operating pressure is not tested.
DIP switch 3	⇒	no function.
- Pre-select the number of post cleaning cycles required via multi-position switch (12) (refer to Section 7.4). Post cleaning is only available when the remote control function is used. DIP switch 1 ON.
- Re-check that the controller is correctly connected in accordance with the connection diagram, drawing 5.1.
- Connect the supply voltage according to the type plate and activate the controller by using the ON/OFF switch (6).

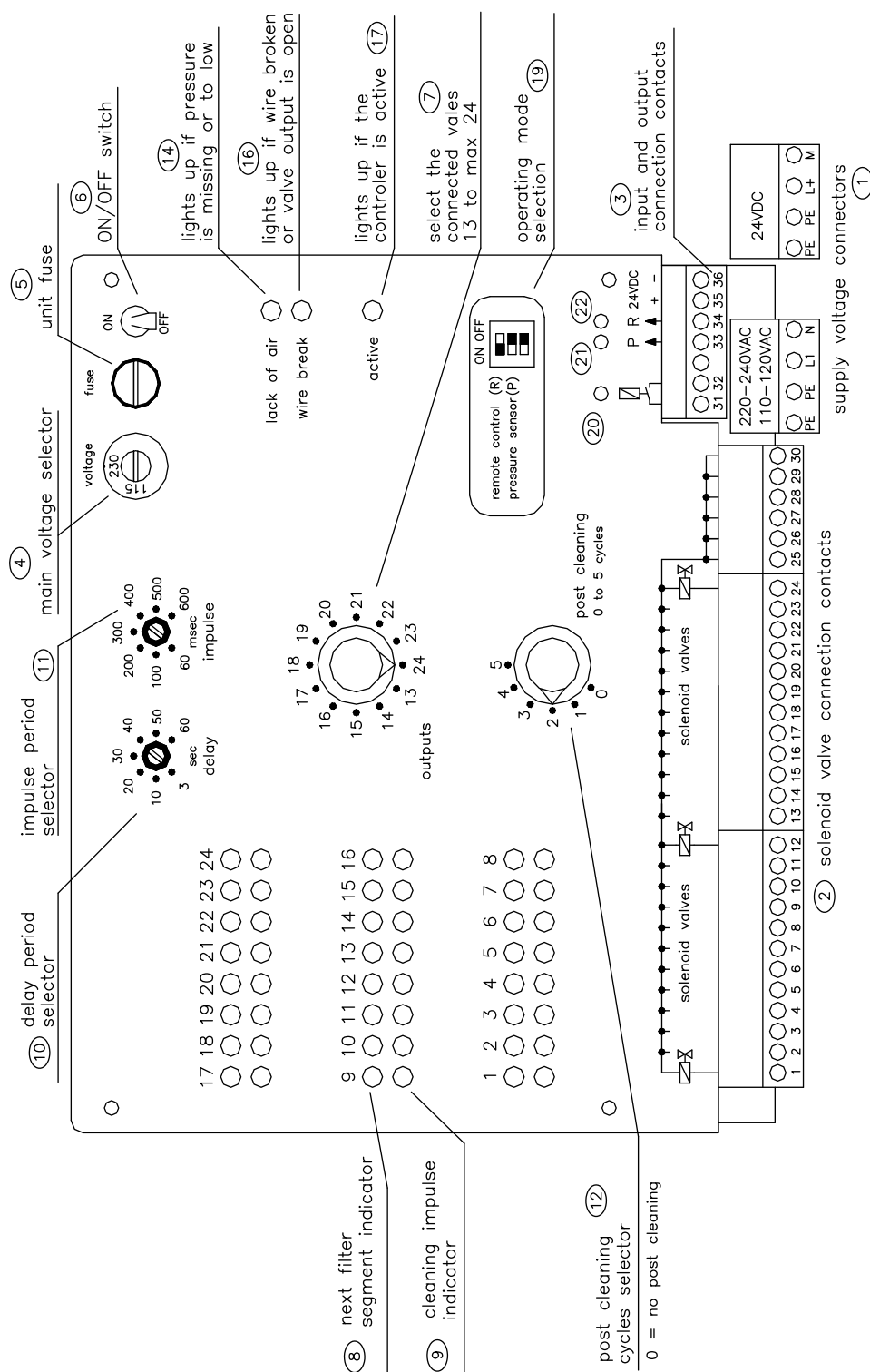
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Signalling	The following LED's will come on after the controller has been switched on:		
	active (green)	(17)	if remote control function is active, start via 1 signal on input "R"(refer to Section 7.1)
	next output (green)	(8)	
	operational message (green)	(20)	only if controller is ACTIVE
	signal P (yellow) pressure switch control	(21)	depends on switch status of connected trigger
	signal R (yellow) remote control	(22)	depends on switch status of connected trigger
Start with remote control	<p>The dedusting process commences as soon as 1 signal is detected at input R. The connected solenoid vales will be controlled with the selected impuls-delay periode.</p> <p>0 signal at input R stops the valve control. The control continues with a renewed star.</p>		
Remote control OFF	<p>The dedusting commences as soon as the supply voltage is connected. The connected solenoid vales will be controlled with the selected impuls-delay periode.</p>		
	<ul style="list-style-type: none"> Check that the solenoid valves are working correctly At a fault-free drive the operational message contact remains closed for the complete run. LED (17) lights without interruption. 		
	<ul style="list-style-type: none"> After completing the commissioning: Screw the lid on again and check the cable entries. Not needed cable entries must be closed with stoppers. (Only relevant for the control in add on housing) 		

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Drawing 6.1: Front panel overview

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7 Control and signal functions

7.1 Remote control input R

It is possible to control the controller remotely via input R on contact strip (3). The following switch types may be connected to input R.

1. potential-free contact (switch or relay)
2. switch with electronic output PNP
3. 12 to 30 VDC, against 0 V

The input is reverse polarity safe

The remote control function is activated by setting DIP switch 1 (19) to ON and de-activated if that switch is set to OFF. The DIP switch position may be changed whilst the controller is in operation.

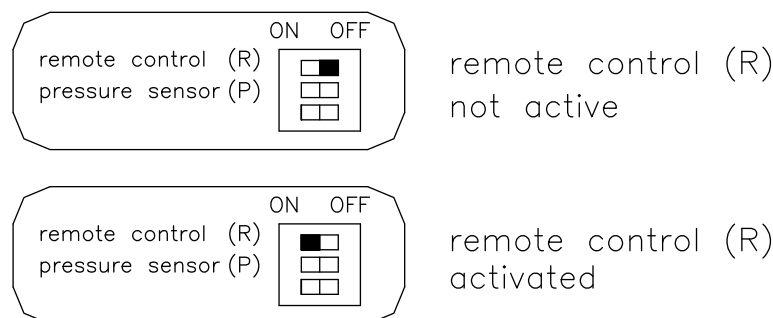


Illustration 7.1: Possible settings of DIP switch 1

If the remote control function is activated, the dedusting process commences as soon as 1 signal is detected at input R. LED (22) lights up.

If the remote control function is not active, then dedusting commences as soon as the supply voltage is connected.

Input R may alternatively be used for connection of a differential pressure regulator. This starts the dedusting process in dependence to the filter resistance.

If a differential pressure regulator is to be connected to input R as well as the remote control, then the remote control start signal must be wired in series with the differential pressure regulator contact.

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7.2 Operational message

A potential-free normally open relay contact is available on contact strip (3) for indicating the operational status.

The operating relay only closes if the controller is switched to ACTIVE. If a fault occurs, such as wire break or lack of air, the operating relay will open.

The controller will continue operation without interruption.

The relay will close again as soon as no further faults are detected. The **green** LED (20), above contact strip (3) will light up.

7.3 Pressure switch Input P

The nominal operating pressure in the pressure storage column can be monitored by connecting a pressure sensitive switch to input "P", contact strip (3).

The following switch types may be connected to input "P" :

1. Potential free contact (normal pressure switch);
2. Switch with electronic output PNP;
3. Direct current between 12 and 30VDC, against 0V.

The input is reverse polarity proof.

The nominal operating pressure test function is activated by setting DIP switch 2 (19) to ON, it is de-activated by setting this same DIP switch to the OFF position. The DIP switch position may be changed whilst the controller is in operation.

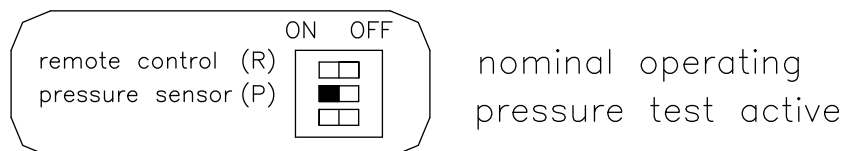


Illustration 7.2: DIP switch 2 settings

The nominal operating pressure test occurs at the end of the delay.

If a signal is not detected at input "P", the LED "lack of air" (14) will light up. This indicator goes off if a 1 signal is detected at input "P" when the test is repeated at the end of the following delay.

If a 1 signal is detected at input "P", **yellow** LED (21) will light up.

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7.4 Post-cleaning

The "post-cleaning" selector switch (12) may be set to values between 0 and 5 and enables post cleaning of the filter after the controller has been switched off via input "R" with reduced delay period. Refer to Section 3, Technical Data. The number of cleaning cycles can be set to between 0 and 5 via the selector switch.

If this switch is set to "0", there will be no post cleaning. After the controller has been switched off via input "R", it will come to a standstill immediately following the end of any dedusting impulse (operating mode STANDBY).

If the selector switch is set to values between 1 and 5, the controller will switch over to post cleaning after it has been switched off via input "R". Any sequence which has already commenced will be further processed using the shortened delay period. Post cleaning itself commences with the beginning of the next cycle.

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8 Fault messages

The fault indication "wire break" is assigned to the disturbed output. This indicator will go off when the next non-faulty impulse is received.

Example: The message "wire break" occurs after the output 5 was controlled. After controlling the output 6 the LED wire break goes off again. From this results that the wire break fault was caused from the solenoid valve 5..

8.1 Causes of fault and elimination

Messages	Indication	Causes of fault	Elimination
Wire break	LED red This indicator will go off when the next non-faulty impulse is received.	No output load during the control impulse or short-circuited valve output.	<ul style="list-style-type: none"> • Check the settings of the multi-position switch (7). The number of connected valves must agree with the adjusting of the multi-position switch • Check the valve connection • Check the valve
Lack of air	LED red	The pressure switch input P indicates no signal at the end of the delay time.	<ul style="list-style-type: none"> • Check the compressed air and the pressure switch • If no monitoring of the compressed air shall be carried out, switch the DIP switches 2 (19) to the OFF position.

EC Declaration of Conformity

electronic solenoid valve control type **IFC 10**

Herewith we declare that the electronic solenoid valve control

IFC 24 in add-on housing polycarbonate IP65

comply with following relevant regulations:

- EC directive **2004/108/EG**
(on electromagnetic compatibility)
- EC low voltage directive **2006/95/EG**
- EC directive **94/9/EG**
(Equipment and protective systems intended for use in potentially explosive atmospheres)

Applied standards:

- EN 61000-6-1
- EN 61000-6-2
- EN 55014-1
- EN 60204-1
- EN 60079-0
- EN 60079-31